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ABSTRACT

Past research and educational efforts in gerontological nursing have revealed that nursing care of the older person has received a low priority by practicing nurses and nursing students. To measure registered nurses' changes in knowledge about aging, nine registered nurses (mean age, 30.7 years, mean number of years nursing experience, 6.9) completed Palmore's Facts on Aging Quiz (FAQ). The quiz was administered prior to and following participation in a 15-hour course on nursing care of the acutely ill, hospitalized older person. An analysis of the results showed that the nurses' cognitive base about aging had been expanded and that some of their misconceptions had been altered as a result of the educational course. Mean pretest score on the FAQ was 29 (out of 50), while the mean posttest score was 33.3. Posttest score gains were attributed to learning and to a decreased number of don't know answers (45 on the pretest to 4 on the posttest). The nurses' bias toward the aged was positive on both tests (the pretest showed a 7.7 percent net bias and the posttest showed a 4.0 percent net bias), a condition that may have facilitated their learning the content and benefiting from the program's experiential activities. Future evaluations, however, should focus on the effects of implementing theoretical content in the clinical setting and on attitudinal changes, neither of which can be measured by the FAQ. (BL)

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MEASURING REGISTERED NURSES' CHANGES IN KNOWLEDGE ABOUT AGING

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A two-part, fifteen hour educational program provided an overview of content relative to the nursing care of the acutely ill, hospitalized older person. Theoretical bases emphasizing integration of the nursing process included the biologic and pathophysiologic changes in aging, psychosocial and environmental-orientation needs of the older person and resources to assist the older person with the aging process. Experiential activities were also provided.

Prerequisites for attendance by the registered nurse participants were preferably a minimum of 1 ½ - 2 years of nursing experience and with the older person, an interest in expanding one's knowledge base of the nursing care of the older person and the ability to attend both days of the program. Emphasis on the stated experiential level was because of the nurse-teacher's perception that the degree of benefit from the program would be related to the prerequisite nursing experience of each participant. This perception was also validated by gerontological literature findings and conference reports. Aging and gerontology are topics which require an interest and sensitivity on the part of the learner. The latter is also facilitated by one's life experiences and participation in roles such as spouse, worker, parent, etc. Past research and educational efforts in gerontological nursing (De Lora and Moses, 1969; Brower, 1977; Steffl, 1981; Brower, 1981) have revealed that nursing care of the older person has received a low priority by practicing nurses and nursing students. Elizabeth G. Nichols, while at the University of California San Francisco School of Nursing, commented in 1981 that, based upon her academic and clinical experiences, persons seem to "enter" or "grow into" gerontological nursing at age thirty-four after prior experience in other aspects of nursing but primarily with a medical nursing background. She concluded

that perhaps nursing educators are expecting too much of new nursing graduates to choose this specialty considering their developmental stage, average age, perceptions of nursing, etc. at the time of their formal entry into this occupational role.

Based upon the program's description and content, each nurse participant was expected to achieve the following objectives upon completion of the program:

1. discuss own attitude/s towards aging,
2. identify assessment factors relative to normal aging,
3. utilize specific nursing interventions for selected aspects of nursing care of the older person,
4. describe specific environmental aspects which influence the older person's adaptation to the aging process and
5. assess for family or community resources which are appropriate to the needs of the older person.

Implementation of these objectives was required via written satisfactory completion of a specially designed case study after the formal educational program had been completed.

The mean age of the participants was 30.7 years with a range from 22 to 52 years. Four nurses held a baccalaureate degree in nursing, three nurses had acquired an associate degree in nursing and one nurse had graduated from a diploma program in nursing. One nurse held a masters degree in nursing as her highest educational level. The nursing experience of the participants averaged 6.9 years with a range from 8 months to 30 years.

The nurses' average estimate of the percentage of persons age 60 and older in their current clinical settings was 76.5. Most of their prior and current clinical experiences with older persons had been with the sick elderly. Some individuals also had community health and nursing home clinical experiences within their basic nursing education programs. The latter's

course content relative to gerontological nursing had focused primarily on the physiological changes of aging and growth and development. Only three individuals had participated in continuing education in gerontology-gerontological nursing within the past year; the content was on psychosocial aspects, physiology of aging and varied topics.

Palmore's Facts on Aging Quiz (FAQ), which is composed of true and false statements, was utilized as the pretest and posttest for this educational experience. The pretest was administered before beginning the first part of the program; the posttest was given seven days later at the end of the second part of the program. This test had been chosen primarily because of its ability to measure information about aging, to identify the most frequent misconceptions about aging and to provide an indirect measure of bias towards the aged. The test can also be utilized as a before and after measure of the effects of learning experiences and/or changes in information over time (Palmore, 1977). The test has been administered in many clinical and educational settings since its first publication in 1977.

The nurse-teacher had perceived that a short term educational program on aging would probably not significantly alter the participants' attitudes towards aging and the aged. Yet, a need existed for measures of any changes before and after the program's implementation. Recognition was given to Palmore's emphasis that the test's bias score only measures attitudes indirectly and is less accurate than using a semantic differential scale (Palmore, 1980).

The quiz, as utilized for this educational experience, incorporated the original 25 item form (FAQ_1) (Palmore, 1977) and the alternate 25 item form (FAQ_2) (Palmore, 1981[b]). Both

versions were included in the pretest and posttest with the order having been reversed in the latter. Administration of the test also incorporated recommendations from the literature (Miller and Dodder, 1980; Palmore, 1980; Palmore, 1981[a]; Palmore, 1981[b]) as to wording and the inclusion of a don't know response to minimize guessing. All items of the quiz were included in the theoretical content of the program. The results are reported for the nine individuals who completed the tests and all evaluation tools. Both tests were coded to enable before and after comparisons of each nurse participant's responses which were recorded anonymously. The FAQ_2 results were corrected for comparison with FAQ_1 based on Palmore's recommendations of 1981.

The participants' pretest score results are depicted in Table 1 along with their educational levels and lengths of work experience with older persons. Available literature has reported that persons with more education in gerontology usually have obtained higher scores on the test (Palmore, 1977; Holtzman and Beck, 1979; Palmore, 1980; Palmore, 1981[b]). The nurses' mean total pretest score was 29.0 (58 percent); the standard deviation was 4.6. The range was from 20 (40 percent) to 34 (68 percent). The FAQ_1 part had more correct responses - 15.3 (61.4 percent) compared to 13.7 (55.7 percent) for FAQ_2. The three nurses who obtained the highest pretest scores had received gerontological content within their basic nursing education program which was within the prior two years. This content and the length of time since its reception were probably what were significant rather than their attained educational levels.

The posttest scores for the group showed total increased numerical gains for most individuals. The mean total posttest

Table 1

PARTICIPANTS' PRETEST SCORES

Person	Total n	%	FAQ_1 n	%	FAQ_2 n	%	Educational Level	Elderly Experience
	$\bar{x}$29.0	58	$\bar{x}$15.3	61.4	$\bar{x}$13.7	55.7		
F	34	68	19	76	15	61	B.S.N.	8 mos.
D	33	66	14	56	19	77	Diploma	2 yrs.
I	32	64	18	72	14	57	B.S.N.	1 3/4 yrs.
E	31	62	18	72	13	53	Masters	30 yrs.
G	30	60	13	52	17	69	B.S.N.	8 1/2 yrs.
J	30	60	15	60	15	61	B.S.N.	3 yrs.
A	27	54	16	65	11	45	A.D.	8 mos.
L	24	48	12	48	12	49	A.D.	1 yr.
B	20	40	13	52	7	29	A.D.	1 1/2 yrs.

score was 33.3 (66.7 percent); the standard deviation was 3.9. The scores ranged from 25 (50 percent) to 38 (76 percent). These gains do not seem to be related to educational or experience levels. Persons F and D did not demonstrate a total score change from the pretest. Person B scored the lowest on both administrations of the quiz. FAQ_1 results were also higher on the posttest; the mean number of correct responses was 17.8 (71.1 percent) compared to a mean of 15.6 (63.2 percent) for FAQ_2. (Table 2)

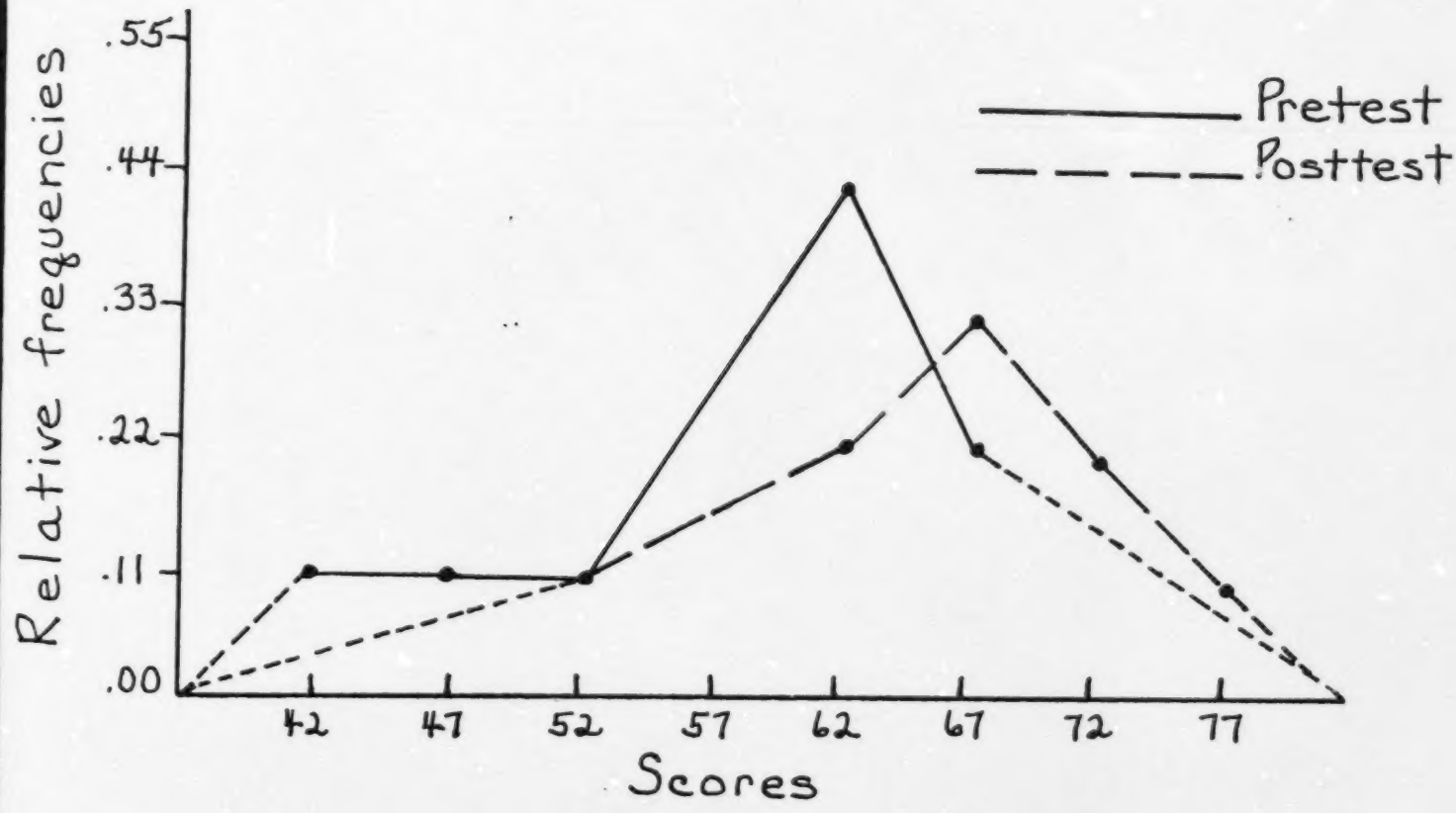
The mean point gain on the posttest was 4.3 This gain compared favorably with the reported gains from other studies (Palmore, 1980). The range of the point gains from one to fourteen indicated that a variety of point gains had occurred. Most of the FAQ_1 posttest percentage scores ranked comparatively with college faculty and graduate nursing students' scores. The higher pretest FAQ_1 results compared to graduate nursing students' achievement (Palmore, 1980). Knowledge about aging by highest educational level had not yet been published for the FAQ_2 at the time of this analysis.

To determine whether a total gain of thirty-nine points on the posttest was significantly higher than the pretest score, a paired T test was performed on the participants' pretest and posttest scores. Sufficient evidence ($t= -3.028$, $df= 8$, $p= < .01$) existed that the scores had improved. Figure 1 depicts the participants' test scores for the program. The pretest scores start at 42, peak at 62 with a relative frequency of .44 and end at 67, the mid point of the sixth class interval. The posttest scores begin at 52, peak at 67 with a relative frequency of .33 and terminate at 77, the midpoint of the last class interval.

Table 2

PARTICIPANTS' POSTTEST SCORES

Person	Total n	%	FAQ_1 n	%	FAQ_2 n	%	Educational Level	Elderly Experience
	$\bar{x}$33.3	66.7	$\bar{x}$17.8	71.1	$\bar{x}$15.6	63.2		
L	38	76	21	84	17	69	A.D.	1 yr.
I	37	74	18	72	19	77	B.S.N.	1 3/4 yrs.
G	36	72	18	72	18	73	B.S.N.	3 1/2 yrs.
J	34	68	20	80	14	57	B.S.N.	3 yrs.
F	34	68	19	76	15	61	B.S.N.	8 mos.
D	33	66	18	72	15	61	Diploma	2 yrs.
E	32	64	17	68	15	61	Masters	30 yrs.
A	31	62	18	72	13	53	A.D.	8 mos.
B	25	50	11	44	14	57	A.D.	1 1/2 yrs.



PARTICIPANTS' TOTAL CORRECT RESPONSES

8

Posttest score gains can probably be attributed to learning which occurred and to a decreased number of don't know responses secondary to the learning. In general, persons having the least number of don't know answers tended to score higher on both tests. The number of don't knows decreased from forty-five on the pretest to four on the posttest.

The first part of the quiz, FAQ_1, contains six misconceptions about aging, whereas the second part, FAQ_2, has nine misconceptions about aging. Holtzman and Beck (1979) and Palmore (1980) have reported that persons with less education in gerontology hold more misconceptions about aging. The mean pretest score on the misconception items was 2.6 (17.3 percent); the scores ranged from 1 (6.7 percent) to 4 (26.7 percent) correct answers. The standard deviation was 1.1. The nurses made a total of 112 errors on misconception items on the pretest; 70 errors were made on FAQ_2 compared to 42 errors on FAQ_1. The mean posttest score on the misconception items was 3.9 (26 percent); the range was from 1 (6.7 percent) to 7 (46.7 percent) correct answers. The standard deviation was 2.0. The total of 100 errors was reflected in 61 errors for FAQ_2 and 39 errors for FAQ_1.

To determine whether a posttest gain of twelve correct points on the misconception items was significantly greater than the pretest score, a paired T test was performed on the number of correct answers on the misconception items on the pretest and posttest. Sufficient evidence existed ($t= -2.145$, $df= 8$, $p= <.05$) that the changes in the scores on the misconceptions had occurred.

Table 3 shows the pretest and posttest errors on all misconception items compared to the percent reported incorrect in

Table 3

PARTICIPANTS' ERRORS ON MISCONCEPTION ITEMS

Item	Pretest n	Pretest %	Posttest n	Posttest %	Percent Other Studies
Over 15% age 65 or over	9	100.0	9	100.0*	86.0
Higher rates of criminal victimization	9	100.0	9	100.0*	80.0
Social Security benefits automatically increase with inflation	9	100.0	9	100.0*	69.0
Majority of older people have incomes below poverty level	9	100.0	8	88.9	74.0
Two widows for each widower among the aged	9	100.0	7	77.8	85.0
Do not get their proportionate share (about 11%) of the nation's income	9	100.0	7	77.8	80.0
Majority live alone	9	100.0	7	77.8	58.0
Life expectancy of blacks age 65 is about the same as whites	8	88.9	7	77.8	77.0
Majority are seldom bored	7	77.8	7	77.8*	74.0
More home injuries than <65	7	77.8	7	77.8*	50.0
Majority are seldom irritated or angry	6	66.7	7	77.8	58.0
Majority have serious problems adjusting to their "empty nest"	6	66.7	5	55.5	58.0
One-tenth in long-stay institutions	6	66.7	2	22.2	74.0
Majority unable to adapt to change	5	55.6	6	66.7	47.0
SSI guarantees a minimum income for needy aged	4	44.4	3	33.3	69.0

* No change from pretest

other studies (Palmore, 1977; Holtzman and Beck, 1979; Palmore, 1981[b]). The figures generally indicate a higher percentage of errors compared to the published findings. Five items showed no change in error on both tests. The fact that four individuals recognized that 10 percent of the elderly are not in institutions is probably related to the knowledge gained from the nursing home participant observational experience which was part of the program. The program, seemingly, did not change five individuals' view that the majority of old people are unable to adapt to change. One person even became negative regarding this point. The possibility exists that the content of these items did not receive strong enough emphasis in the teaching component and/or that their relationship to clinical practice was perceived by the nurses to be less applicable. Hence, less quantitative learning occurred on these items.

Erdman Palmore (1977, 1981[b]) reported that errors on some items probably indicate a negative or positive bias towards the aged. The first part, FAQ_1, contains sixteen negative and five positive bias items if marked incorrectly. The second part, FAQ_2, has fourteen negative and five positive bias items if incorrect. Therefore, the pretest and posttest were each composed of forty bias items. A net anti-aged or pro-aged bias score was computed by subtracting the percentage of errors on the negative bias items from the percentage of errors on the positive bias items. A negative score means a net anti-aged bias, whereas a positive score means a net pro-aged bias. Several misconception items are also negative bias items. Reported studies have usually demonstrated more anti-aged than pro-aged bias (Palmore, 1977; Klemmack, 1978; Palmore, 1981[b]). Persons with more education usually have less anti-aged bias (Palmore, 1980), however, more

anti-aged bias has been demonstrated on FAQ_2 because, seemingly, these facts have not been learned as well (Palmore, 1981[b]). Little published data is available on FAQ_2 and its concurrent usage with FAQ_1.

The participants' incurred 138 negative bias errors (15.3 mean percent) and 23 positive bias errors (23.0 mean percent) on the pretest yielding a 7.7 percent pretest net pro-aged bias. The nurses made 116 negative bias errors (13.0 mean percent) and 17 positive bias errors (17.0 mean percent) on the posttest. The subtraction yielded a 4.0 percent net pro-aged bias, a loss of 3.7 percent pro bias on the posttest (Table 4).

Table 4

PARTICIPANTS' PRETEST AND POSTTEST PRO AND ANTI-AGED ERRORS

	n Persons	Mean % Pro-Errors	Mean % Anti-Errors	% Pro-Aged Errors Minus % Anti-Aged Errors
Pretest	9	23.0	15.3	7.7
Posttest	9	17.0	13.0	4.0

The previously mentioned loss is attributed to the occurrence of more anti than pro-aged errors on the FAQ_1 part of the posttest, therefore, facilitating a lessened total net pro-aged bias. Additionally, the total results contradicted the

tendencies towards a net anti-aged bias (Hannon, 1981; Palmore, 1977, 1981[b]) in the published studies available at the time of this analysis. The fact that FAQ_2 results tend to have more anti-aged bias than FAQ_1 (Palmore, 1981[b]), however, was verified. Perhaps the nurses' educational levels, interest in learning and in the elderly and their history of clinical experience with older persons were intervening variables. Because the nurses' net positive bias score lowered, the program, itself, was probably not a factor towards facilitating a more positive bias towards the aged as measured by this tool.

Palmore's Facts on Aging Quiz is primarily an edumetric tool, that is, a test of knowledge, and this fact has been verified by its supporting data base and statistical data from completed studies. The primary benefits of the quiz are as a measure of cognitive knowledge and the identification of the most frequent misconceptions about aging. These benefits were proven through the statistical data previously cited relative to the improvements in these nurses' scores. Although persons D and F had remarked that their overall knowledge base had increased, their pretest and posttest total scores did not change. Readiness to integrate this information was probably a variable in person F's performance as her experience level was eight months.

In conclusion, this selected small sample evaluation has demonstrated that the nurses' cognitive base about aging as ascertained via the FAQ had been expanded and that some of their misconceptions about aging had been altered. The fact that their bias towards the aged was positive, although low, probably facilitated their learning the content and benefiting from the program's experiential activities.

While the outcomes derived from utilizing the Facts on Aging Quiz as a measurement tool have been described, recognition is also given to the fact that the implementation of theoretical content in the clinical setting and experientially related attitudinal changes cannot be measured via this tool. Hence, a need exists for the concurrent usage of other forms of measurement to verify such changes. Data to elicit the latter was incorporated in the program's varied evaluation tools and in the case study components. The results yielded information verifying that such changes had, indeed, occurred.

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